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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/034,464	12/28/2001	Thomas J. Bonola	1662-50000 (P98-2428)	9354
22879	7590	08/26/2004	EXAMINER	
HEWLETT PACKARD COMPANY P O BOX 272400, 3404 E. HARMONY ROAD INTELLECTUAL PROPERTY ADMINISTRATION FORT COLLINS, CO 80527-2400			RAY, GOPAL C	
			ART UNIT	PAPER NUMBER
			2111	

DATE MAILED: 08/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/034,464

Applicant(s)

BONOLA ET AL.

Examiner

Gopal C. Ray

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 and 44-72 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-28 and 44-72 is/are allowed.
- 6) ☒ Claim(s) 29, 33 and 35 is/are rejected.
- 7) ☒ Claim(s) 30-32, 34 and 36 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

1. Applicant's election without traverse of Group I, claims 1-36 and 44-72 in the reply filed on 8/3/2004 is acknowledged. Applicant should cancel non-elected claims 37-43 in response to this office action. Claims 1-36 and 44-72 are presented for examination.
2. The drawings filed on 12/28/2001 are acceptable by the examiner. However, direct any inquiries concerning drawing review by the USPTO draftsman to the Drawing Review Branch at (703) 305-8404.
3. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification. Furthermore, all claims should be revised carefully to eliminate all grammatical errors and antecedent basis problems.
4. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
5. Claims 29, 33 and 35 are rejected under 35 U.S.C. § 103(a) as being unpatentable over US Patent 6,182,176 issued to Ziegler et al. in view of US Patent 6,122,659 issued to Olnowich.

As per claim 29 the reference of Ziegler et al. teaches “allowing the hardware device to participate in a coherency domain of the computer system by the hardware device having a coherent cache memory duplicating a cache line of the FIFO buffer” in Fig. 2, elements 116, 120 and col. 9, lines 15-21; “writing information to the cache line of the FIFO buffer by the software stream” in col. 9, lines 10-14 and 36-39.

The reference of Ziegler et al. fails to expressly teach the limitation of “notifying the hardware device that the information is available in the FIFO buffer by invalidating the duplicate copy of the cache line of the FIFO buffer in the onboard cache memory of the hardware device”. However, the above feature was well known to one of ordinary skill in the art at the time the invention was made as evidenced by Olnowich. The reference of Olnowich teaches the feature in Figures 11A-C and col. 20, lines 4-7. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Ziegler et al. to implement “invalidate/update” feature of Olnowich to obtain the claimed invention because both the prior art systems are analogous to improve cache coherency and the above feature of Olnowich would allow the system of Ziegler et al. to access valid data by efficiently using the above cache coherency technique.

As per claim 33, the reference of Olnowich teaches “obtaining a copy of the cache line by the hardware device after receiving the invalidation command” in col. 25, lines 58-67; in claim 35, the reference of Olnowich teaches “ transferring response information from the hardware device to the software stream by the hardware device writing the response information to a second first-in/first-out (FIFO) buffer in the main

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memory array" in col. 20, lines 4-7. The motivation for combining the references discussed in the rejection of claim 29 is also applicable here.

6. Claims 1-28 and 44-72 would be allowable over the prior art on record. Claims 30-32, 34 and 36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an Examiner's Statement of Reasons for Allowance:

The instant claimed is directed to a method and related system that allows hardware devices to participate in the coherency domain of a computer system. The examiner has done a thorough search and found no prior art that teaches or fairly suggests the combination of various claimed elements including "a hardware device coupled to a second bridge device by a secondary expansion bus, wherein the hardware device has a cache memory that duplicates a portion of a FIFO buffer, and wherein the hardware device cache memory is kept coherent by way of the cache coherency protocol" as claimed in claim 1 and similar limitations in claim 44. Dependent claims 2-28, 30-32, 34, 36 and 45-72 further limit the subject matter of the respective parent claims which the prior art does not teach or fairly suggest.

If applicant is aware of any better prior art than those are cited, they are required to bring the prior art to the attention of the examiner. Moreover, any comments considered necessary by applicant must be submitted in response to this office action. Furthermore, if applicants are aware of any better prior art than those are cited, they are required to bring the prior art to the attention of the examiner.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Applicant is urged to consider the references. However, the references should be evaluated by what they suggest to one versed in the art, rather than by their specific disclosure.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gopal C. Ray whose telephone number is (703) 305-9647. The examiner can normally be reached on Monday - Friday from 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Rinehart, can be reached on (703) 305-4815. The new fax phone number for this Group is (703) 872-9306.

Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to [mark.rinehart@uspto.gov].

All Internet e-mail communications will be made of record in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122. This is more clearly set forth in the Interim Internet Usage Policy published in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to TC2100 receptionist whose telephone number is (703) 305-3900.

Gopal C. Ray
GOPAL C. RAY
PRIMARY EXAMINER
GROUP 2000